illustrates an example of the image view-based crosstalk matrix X calculated based on the crosstalk modeling result as illustrated in FIG. **9**A.

[0124] The 3D display apparatus may derive an image view-based crosstalk inverse matrix based on the image view-based crosstalk matrix (see **640** of FIG. **6**).

[0125] According to another exemplary embodiment, the 3D display apparatus may adjust the theoretically modeled crosstalk by reflecting the Gaussian optical profile after the theoretical crosstalk modeling through the method as illustrated in FIG. **8**. For example, the 3D display apparatus may perform Gaussian curve fitting on the theoretically modeled crosstalk and adjust sharpness. The 3D display apparatus may perform optimum crosstalk modeling through the Gaussian refinement in a form as illustrated in FIG. **10**. In this example, the 3D display apparatus may perform the Gaussian curve fitting of the theoretically modeled crosstalk by applying the Gaussian optical profile.

[0126] According to another exemplary embodiment, the 3D display apparatus may derive the crosstalk inverse matrix, and then adjust a coefficient of the crosstalk inverse filter by reflecting a characteristic of the image (see **650** of FIG. **6**). The crosstalk inverse filter may be a filter in which an inverse matrix of the crosstalk matrix is implemented in a filter type.

[0127] For example, as illustrated in FIG. **11**, the 3D display apparatus may calculate a gradient of an image view based on an epipolar image, and adjust the coefficient of the crosstalk inverse filter according to the calculated view gradient.

[0128] Referring to FIG. **11**, the 3D display apparatus may calculate a view gradient (i, n) for a target pixel region based on pixel values of a reference view V(i, n) and neighboring views V(i, n−1), V(i, n−2), V(i, n+1), and V(i, n+2) of the target pixel region. For example, the view gradient (i, n) may be calculated based on the following Equation 5.

$$\text{view\_grad}(i, n) = W_1 X \frac{|V(i, n) - V(i, n-1)| + |V(i, n) - V(i, n+1)|}{2} + W_2 X \frac{V(i, n) - V(i, n-2)| + |V(i, n) - V(i, n+2)|}{2} \quad \text{[Equation 5]}$$

[0129] The 3D display apparatus may calculate the view gradients for the neighboring pixel regions of the target pixel region through the same method described above, and calculate a view gradient smoothing value view grad smoothing (i, n) based on the calculated view gradients view grad(i, n−2), view grad(i, n−1), view grad(i, n+1), and view grad(i, n+2)) for the pixel regions. For example, the 3D display apparatus may calculate the view gradient smoothing value by averaging the view gradient values for the pixel regions. In this example, the 3D display apparatus may calculate the view gradient smoothing value view grad smoothing (i, n) based on the following Equation 6.

$$\text{view\_grad\_smoothing}(i,n)((\text{view\_grad}(i,n)+\text{view\_grad}(i-1,n)+\text{view\_grad}(i+1,n)+\text{view\_grad}(i-2,n)++\text{view\_grad}(i+2,n))/5 \quad \text{[Equation 6]}$$

[0130] FIGS. **12**A to **12**C are diagrams illustrating a method of adjusting a coefficient of a crosstalk inverse filter according to various exemplary embodiments.

[0131] According to an exemplary embodiment, the 3D display apparatus may adjust a coefficient of a crosstalk inverse filter based on the view gradient value or the view gradient smoothing value as described in FIG. **11**.

[0132] For example, the crosstalk inverse filter may be divided into an angular smoothing filter and an angular sharpening filter as illustrated in FIG. **12**A. That is, the crosstalk inverse filter may be a filter in which the angular smoothing filter and the angular sharpening filter are combined.

[0133] According to an exemplary embodiment, the 3D display apparatus may divide the crosstalk inverse filter into the angular smoothing filter and the angular sharpening filter, adjust coefficients of the divided filters, and adjust the coefficient of the crosstalk inverse filter by combining the divided filters. However, in some examples, the 3D display apparatus may adjust the filter coefficient without dividing the crosstalk inverse filter into the angular smoothing filter and the angular sharpening filter.

[0134] As illustrated in FIG. **12**B, the 3D display apparatus may adjust the coefficients of the angular smoothing filter and the angular sharpening filter by applying a weight corresponding to the view gradient value or the view gradient smoothing value in a state that the crosstalk inverse filter is divided into the angular smoothing filter and the angular sharpening filter. The weight corresponding to the view gradient value or the view gradient smoothing value may be previously set in a form as illustrated in FIG. **12**C. In response to the coefficients of the angular smoothing filter and the angular sharpening filter being adjusted, the 3D display apparatus may acquire the coefficient-adjusted crosstalk inverse filter based on the adjusted coefficients.

[0135] The 3D display apparatus may minimize deterioration of image quality such as overshoot artifact occurring in an edge region and the like according to the crosstalk inverse compensation based on the coefficient-adjusted crosstalk inverse filter based on the image characteristic.

[0136] FIG. **13** is a diagram illustrating a crosstalk inverse compensation method according to an exemplary embodiment.

[0137] According to the method illustrated in FIG. **13**, the 3D display apparatus may generate an epipolar image corresponding to each pixel line by combining pixel lines of a plurality of rendered image views View **1** to View N, and perform crosstalk inverse compensation by applying the crosstalk inverse filter to the generated epipolar image. The crosstalk inverse filter may be a filter in which the filtering coefficient is adjusted based on the characteristic of the input image as illustrated in FIG. **11**.

[0138] The 3D display apparatus may acquire a plurality of target image views New View **1'** to New View N' based on the epipolar image which is subject to the crosstalk inverse compensation as illustrated in FIG. **13**.

[0139] The 3D display apparatus may provide a multiview image by arranging the plurality of generated target image views New View **1'** to New View N' on the display panel **111** in a preset arrangement pattern.

[0140] FIG. **14** is a diagram illustrating a method of generating an epipolar image according to an exemplary embodiment. In FIG. **14**, rendering is performed on 35 multiview images having a height h and a width w.

[0141] Epipolar images corresponding to pixel lines may be generated by combining the pixel lines of the 35 multiview images **1411** to **1414**. For example, as illustrated in